OPERATING CHARACTERISTICS

Miniature Recorder

As a guide, the following operational characteristics are considered to be pertinent to the development of the miniature recorder for DATA collection. It is proposed, therefore, that the recorder be configured along the following lines: 25X1

1. This unit shall be considered only as a recorder. Reproduction or playback will not be required by the same unit. It is necessary, however, that the unit have a provision whereby monitoring while recording is possible.

2. Three record channels with track widths of .044 and .100 center to center spacing on 1/4 inch tape. Track 1 and 2 will be considered as data tracks; track 3 will be considered as a reference and supplementary information track. Tracks 1 and 2 should have a frequency response of not less than 10 kc at the 3 db point. Track 3 may, if necessary, have a lesser response.

3. The record speed should be 1 7/8 inches per second. It is recommended that the Clevite head be considered so that use of this standard speed will result in the required frequency response. The minimum acceptable recording time is 45 minutes. It is recommended that the use of nylon supply and take up spools be investigated for use with thin base Mylar tape. It is felt that the use of nylon spools will lessen the temperature problem common to this material. Further it is desired that the supply and take up spools be the same size.

4. The recorder should be completely battery operated. Therefore, in the interest of battery life, transistors should be employed wherever possible. It is desired that a single battery source be employed for all electronics and that a separate battery be employed for the motor requirement. A minimum of 20 hours life is required of the motor battery, and 100 hours minimum battery life of the electronics. The battery holders employed in this unit must be suitable for both mercury and common "paste" batteries. This is necessary to circumvent the unsatisfactory low temperature performance of mercury batteries.

5. A minimum electronics should be employed with data tracks 1 and 2 as it is intended that the unit be supplied sufficient audio from its companion receiver to drive the head. After a determination of head characteristics, the details of the amount of drive can be resolved.

6. Associated with Track 3 shall be an internal 1000 cycle reference oscillator. This oscillator in turn would be controlled from a push button from the front panel of the recorder. Also associated with this channel should be a permenently mounted internal microphone as well as a fitting for an external microphone. The external microphone jack and oscillator injection switch should disable the internal microphone circuit when they are in use. The oscillator stability should be better than 1/50,000.

7. A provision should be made for the electrical remoting of all controls involved with the recorder such as: (a) ON-OFF, (b) RECORD, (c) OSCILLATOR INJECTION.

8. [redacted], 25X1
audio noise should be kept to an absolute minimum.

9. The recorder should be housed in a case of zinc alloy adequately protected against moisture, humidity, and fungus damage.

10. The attached sketch will serve as a guide to demonstrate the type of form factor and placement of controls, etc.

A second type of miniature DATA recorder is required which would possess all of the general characteristics outlined above. The difference in the second unit is its feature of being able to playback during a rewind and erase cycle. This would necessitate a recorder unit with erase before record features and erase after playback. The second recorder is intended to be the basis on which a series of unattended installations capable of remote interrogation would be devised. During the playback cycle (rewind) it would be desirable to have the rewind speed be considerably in excess of the original record speed being a factor of some 10:1.

this 2nd recorder has A present application in projects

[redacted] 25X1

Both of these requirements may be incorporated into a single unit with relatively little effort. We are therefore proceeding with the same.

R+D/EP